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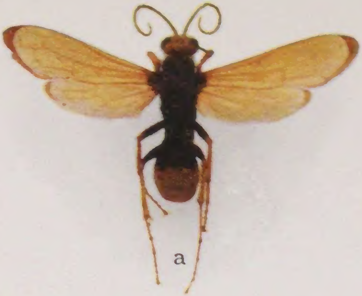
HYMENOPTERA

SERIES No. 1

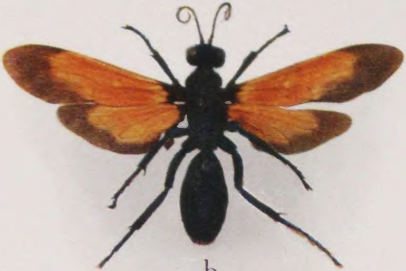
5 *Cards in Colour*

Set E 42

One Shilling



a



b

HYMENOPTERA
(*a*) Female, *Cryptochilus tuberculatus*
(*b*) Female, *Pepsis nitida*
Natural size
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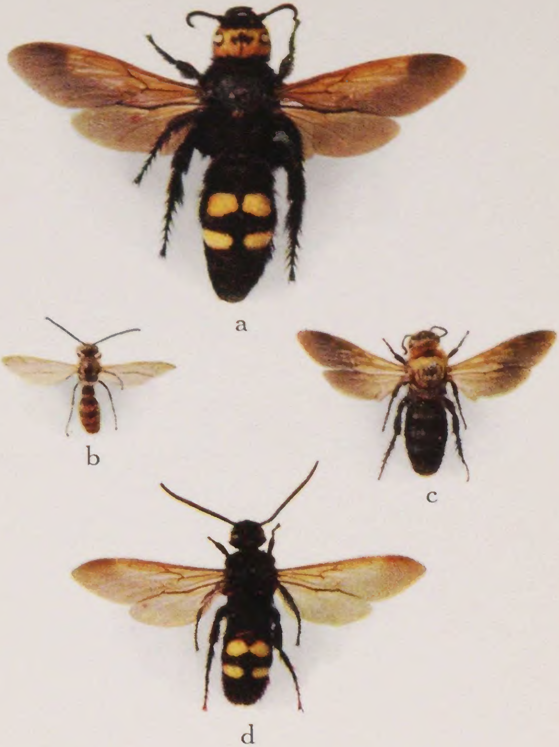

HYMENOPTERA

(*a*) Female, (*d*) Male, *Triscolia flavifrons*
(*b*) Male, (*c*) Female, *Dielis collaris*
Natural size

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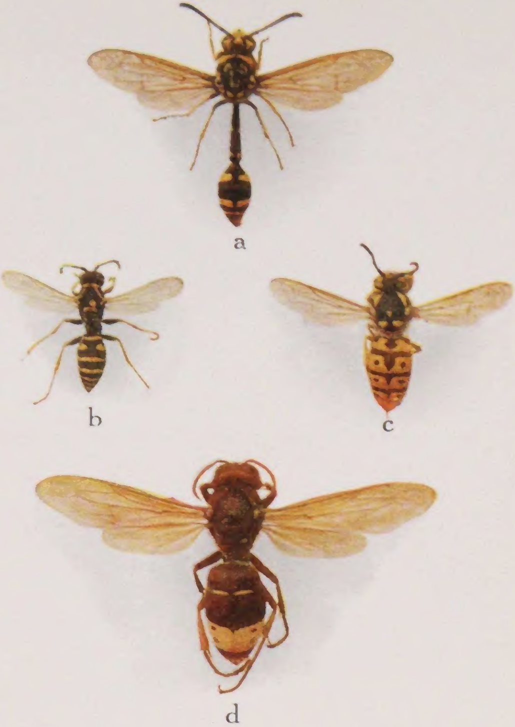

HYMENOPTERA

(*a*) Female, *Eumenes arcuata* (*b*) Female, *Polistes gallicus*
(*c*) Female, *Vespa germanica* (*d*) Female, *Vespa orientalis*
Natural size
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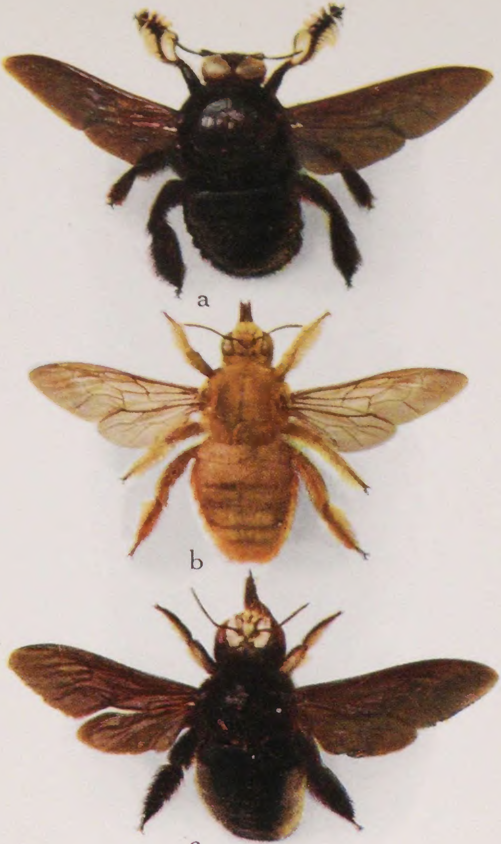

HYMENOPTERA

(*a*) Male, *Xylocopa latipes*
(*b*) Male, (*c*) Female, *Xylocopa nigrita*
Natural size

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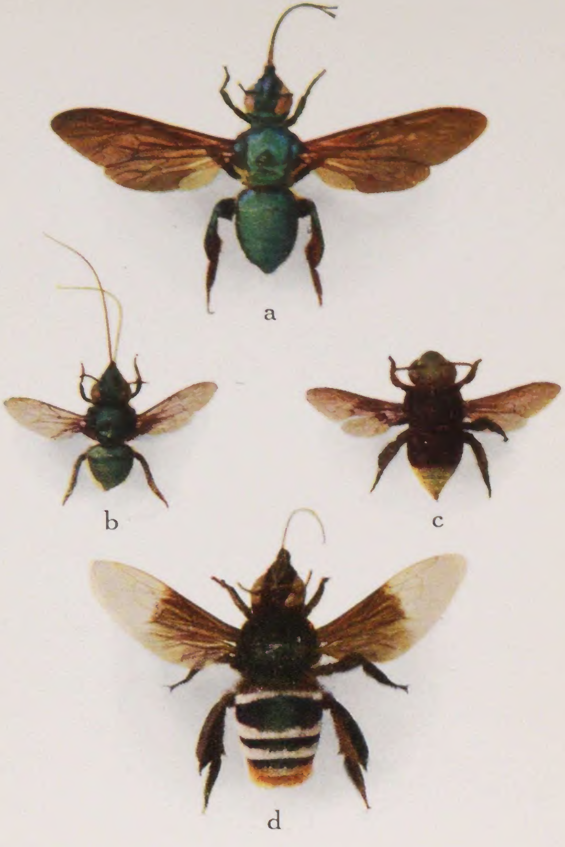

HYMENOPTERA

(*a*) Female, *Exaerete frontalis* (*b*) Female, *Euglossa piliventris*
(*c*) Female, *Euglossa pulchra* (*d*) Female, *Euglossa dimidiata*, var. *niveo-fasciata*
Natural size

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BRITISH MUSEUM (NATURAL HISTORY).

HYMENOPTERA.

Series No. 1.

Although in size or showiness much inferior to many Butterflies and Moths (Lepidoptera) or Beetles (Coleoptera), the Hymenoptera (Bees, Ants, Hunting, Digging, Solitary and Social Wasps, Sawflies and various parasitic families) surpass all other orders of insects in the high level of intelligence reached in certain groups, in the frequently complex organisation of the communal forms and in their economic importance. Of the insects yielding products directly useful to man the Honey Bee (*Apis mellifera*) is easily first, while incalculable good is wrought by those Hymenoptera (Ichneumons, Chalcid Wasps, etc.) which hold in check the insect pests of grain, fruit and other growing crops.

The order is a large one, and includes upwards of 60,000 described species. These, however, represent only a fraction of the existing species, since large areas of the earth's surface remain unexplored so far as the smaller forms are concerned. In Britain there are probably from 4,000 to 5,000 species, amongst which practically all the main groups of the Order are represented ; but in view of the fact that the majority of our native Hymenoptera are of inconsiderable size, the species here selected for illustration are with one exception (*Vespa germanica*) exotic.

E 226. *Scoliidæ.*

This is an extensive family, containing many beneficial insects. The species, which are often of large size, and present striking differences in appearance between the sexes, are parasitic in habit, the hosts being the larvæ of various beetles. In Trinidad the injurious beetle *Phytalus smithii.* which attacks sugar cane, is kept in check by the Scoliid *Tiphia parallela*, and in Mauritius very large sums of money have been saved for the sugar industry by the successful introduction of this parasite.

Triscolia flavifrons is a common parasite of the Rhinoceros beetle (*Oryctes nasicornis*) in S. Europe. The female enters the burrow of the host larva, stings the latter once in the thorax, in an important nerve centre, and deposits an egg, from which in due course a larva emerges to feed on the paralysed beetle grub.

Dielis collaris, in which the differences between the sexes are greatly accentuated, has an extensive range, from Europe to Northern India.

E 227 *Pompilidæ.*

Included in this family is a large group of Hunting Wasps, which prey on spiders, even the largest of these—the Trap-door and Bird-eating forms—becoming victims. The female wasp is an active runner, and may be observed with trembling antennæ searching for her prey. A spider on being found is repeatedly stung, and then dragged to a convenient cavity. After laying her egg, the wasp closes the hole and flies off to find a fresh victim. As regards the species illustrated, *Pepsis nitida* occurs in Argentina, and *Cryptochilus tuberculatus* in Australia.

E 228. *Diploptera.*

The members of this group are the Solitary and Social Wasps, in which the wings when at rest are longitudinally folded.

Of the Solitary Wasps, *Eumenes arcuata* (New Guinea) may be taken as an example. Species of the genus *Eumenes* construct as their nests elegant little pots of clay, containing a small number of cells provisioned with caterpillars for the benefit of the larval wasps. Froggatt (*Australian Insects*, p. 110) notes that the prey of *Eumenes* is imperfectly paralysed, and still remains capable of wriggling. To obviate risk of damage at an early stage, the egg of the wasp, instead of being laid directly on the prey, is suspended by a fine stalk from the roof of the cell.

Polistes gallicus is a widely-spread European species of which several more or less distinct forms occur. The nest is usually small, contains a single comb, and is attached by a short stalk to walls, trees or other supports. In South Europe it is frequently placed on Tamarisk bushes.

Although to the ordinary eye Wasps in the British Islands are all alike, at least three species (*Vespa germanica*, *V. vulgaris* and *V. norvegica*) are of common occurrence with us, one of the commonest of all being *V. germanica*, which has a wide range in Europe, Asia and Africa.

Both *V. germanica* and *V. vulgaris* make subterranean nests, often in the bank of a ditch or stream; the globular nest of *V. norvegica*, on the other hand, a species especially common in Scotland, is attached to a twig in a tree or bush. In spite of the marauding propensities of Wasps, which are autumnal raiders of orchards and beehives, besides frequently entering houses and shops in search of food, they must be credited with being to some extent beneficial by destroying a certain number of harmful flies.

Vespa orientalis, which is found in Continental Europe, as well as in Asia, Africa and elsewhere, has been spread by commerce. This eastern Hornet, like our native species (*V. crabro*), is fierce and pugnacious, and can inflict a painful sting. It has occurred in Britain, imported with currants.

E 229. THE CARPENTER BEES (*Xylocopidæ*).

The largest of all Bees are to be found among the Xylocopidæ, or Carpenter Bees, which are for the most part black and stoutly built insects, with powerful jaws and a strong integument. The wings are long and narrow, and the flight is frequently swift, and accompanied by a loud buzzing.

Carpenter Bees excavate long nesting burrows in dry or decaying wood, the softer kinds being preferred. In Europe *X. violacea* frequently chooses the willow for this purpose, and an old tree may be literally riddled with galleries, from which, if the stem be sharply tapped, the buzzing of the enclosed bee is at once heard. The gallery excavated is divided into several cells, an inch or more in length, in each of which the mother places a kneaded mass of pollen and honey, as well as an egg. The cells are separated by wads of sawdust more or less hardened by the bee, and after development the young bees break down the partitions and find their way out. Amongst the insect enemies of these bees may be noted the large wasp-like *Polochrum repandum* (family Sapygidæ) a solitary parasite of the larvæ of *X. violacea* and somewhat of a rarity; and a tiny Chalcid, hundreds of which may be reared from the bloated larva of the Indian *X. aestuans*. Again, certain Two-Winged Flies of the genus *Hyperechia* (family Asilidæ) closely resemble these bees in appearance, and thus disguised are able to deposit their eggs where the resulting larvæ may attack the bee larvæ. Various beetles also, including species of *Horia* and other genera, feed as larvæ on the food store intended for the young Xylocopa.

The species illustrated are *Xylocopa nigrita*, which is found in West Africa, and *X. latipes*, a native of India.

X. nigrita furnishes a good example of the striking difference between the sexes commonly found in this group; in several species the males are similarly pale in colour.

X. latipes shews an extraordinary expansion of the front legs, affecting the tibia and tarsus; the abnormality in question is confined to the male.

E 230. *Family Apidæ, sub-family Anthophorinæ.*

Exaerete frontalis, found in Central and South America, is one of the most brilliantly coloured of all Bees. In British Guiana this species has been observed feeding on sap exuding from cut wood.

The genus *Euglossa* includes Bees which are frequently of large size and magnificent coloration; the body is metallic, though the sheen may be masked by ornamental hair; the tongue, as the name implies, is of great length. Bees of this genus are actively concerned in the fertilisation of certain Central and South American orchids, as first observed (in the case of *Coryanthes*) by Dr. Crüger, when Director of the Botanical Gardens in Trinidad. The details of the process vary with each species of orchid, but in none are the adaptations displayed more remarkable than in the flowers of *Coryanthes speciosa.* The flowers of the *Coryanthes* are large and pendent. Part of the labellum is modified to form an ample bucket, kept filled with a liquid which drops from another part of the labellum. About an ounce of this liquid is secreted by a single flower, and its sweetness is so slight that it is probably not primarily attractive. The *Euglossa* bees approach the flower to gnaw at the fleshy base of the labellum, and in their competition for this dainty, or perhaps intoxicated by it, fall into the bucket. Once in, escape is possible only by a narrow passage, from the roof of which protrudes the sticky base of the pollen masses. Retreating from its sudden bath, the bee squeezes its way through the passage, emerging with the pollen fixed to its back. The mechanism of the flower is such that, should the pollen carrier now return to the feast or visit a second flower, it will place the pollen on the stigma. Fuller details of the process, and of the anatomy of the flowers will be found in Darwin's " Fertilisation of Orchids," Chapter VI.

In the Museum series of *E. dimidiata* is a specimen with the pollen masses of an orchid still adherent to the hairy covering of the thorax. The species illustrated, *E. dimidiata* var. *niveo-fasciata, E. pulchra* and *E. piliventris,* are all South American.

Set E 42. *November,* 1925.

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